

area of each aperture 16. It will be noted that the first and third variants can be combined, with projecting portions 18 then being superposed on projecting zones 40.

**[0060]** The various variants of the first embodiment of an assembly according to the invention, which have been described up until now, are characterized in that distinct zones on the edge of the electronic module, in particular on the substrate, are superposed on corresponding peripheral areas of the plate aperture, which houses said electronic module. The thickness of these peripheral areas is preferably smaller than that of the pierced plate. According to the invention, said edge zone and said peripheral area, which is superposed thereon, are assembled to each other so that the electronic module is secured in the plate aperture. The edge zone of the electronic module can directly abut against the corresponding peripheral area or be connected thereto via a resin film. Material connections are thus created between the electronic module and the pierced plate by means of specific zones on the edge of the electronic module, located opposite corresponding peripheral zones of the aperture, in which the electronic module is arranged.

**[0061]** FIG. 8 shows a fourth, particular variant of the first embodiment of an assembly of the invention. Assembly 44 is formed by a frame 14 that includes at least one aperture 16, which is separated into two secondary apertures by a crossbeam 46 whose thickness is less than that of plate 14. One could say that aperture 16 has two secondary apertures or equally that there are two apertures separated by a relatively narrow crossbeam. Electronic module 2 is arranged so that there are no electronic elements in a central area of substrate 12, which is superposed on crossbeam 46 once module 2 has been inserted in aperture 16. Module 2 is assembled to plate 14 via horizontal member 46, to which module 2 is, for example, welded or bonded. Other assembling means could be provided by those skilled in the art.

**[0062]** In all of the variants of the first embodiment of an assembly according to the invention that have been described, the thickness of the areas of plate 14 that are peripheral to apertures 16 is preferably smaller than the thickness of the plate in general. It will be noted that other variants with a plate of constant thickness could be envisaged. In such case, substrate 12 is located above plate 14, with the electronic elements in aperture 16.

**[0063]** FIG. 9 shows a second embodiment of an assembly 50 according to the invention. The references that were described above will not be described again in detail here. This embodiment is characterized in that electronic module 2 is assembled to plate 14 via portions of adhesive strip 52, in particular two portions. In this embodiment, electronic module 2 is entirely contained within the corresponding aperture 16 and has no parts superposed on plate 14. The adhesive strip portions 52 define material connections between each electronic module and the pierced plate. These portions 52 can be arranged on either side of electronic module 2. In the example of FIG. 9, these portions 52 form a bridge between substrate 12 of module 2 and the peripheral area of aperture 16. These portions are arranged on the opposite side to the electronic elements carried by substrate 12. This example is in no way restrictive.

**[0064]** This second embodiment is characterized generally by the arrangement of strips formed of distinct material elements forming bridges between the edge of the electronic modules and the corresponding peripheral areas of the apertures housing the electronic modules. An “adhesive strip por-

tion” means generally a strip portion with a surface that adheres both the plate 14 and to substrate 12. The adherence must be sufficient to hold the electronic module in the corresponding aperture 16 during transport and handling of assembly 50, and also during the steps of the card manufacturing method, in which this assembly 50 is produced as a constituent element in the batch of simultaneously manufactured cards.

**[0065]** FIG. 10 shows an advantageous variant of the second embodiment of an assembly 56. The material connection or bridge between the electronic module and the peripheral area of aperture 16 in plate 14 is achieved here via self-adhesive discs 58. The peripheral area of each aperture has notches 60 defining two small intermediate steps. The parts of self-adhesive discs 58 superposed on plate 14 are arranged inside these notches 60 in order to avoid creating any excessive thickness relative to frame 14. The depth of notches 60 can be relatively small, at least equal to the thickness of disc 58, or, conversely, their depth can be relatively large but less than the thickness of frame 14. The references that have already been described are not all described again here.

**[0066]** FIG. 11 shows a third embodiment of an assembly according to the invention. This assembly 62 also includes a pierced plate 14 and electronic modules 2 arranged in apertures 16. These modules 2 are assembled to plate 14 here by heat-reactivable adhesive wires 64. These heat-reactivable adhesive wires 64 pass through plate 14 and, in particular, apertures 16. Each heat-reactivable adhesive wire 64 is arranged to adhere to plate 14 and to the modules 2 through which it passes. In the example shown in FIG. 11, each electronic module 2 is held in the corresponding aperture 16 by two wires 64 arranged in proximity to two opposite edges of the module. The heat-reactivable adhesive wire 64 can be a wire made of synthetic or natural material, or covered with adhesive. In another variant, the wire itself is formed by a solid resin, which can be made to adhere by applying heat or ultra-violet light. Of course, in another variant, an adhesive strip that passes through apertures 16 can form wire 64. In another variant, the heat-reactivable adhesive wires could pass grooves made in plate 14 between two adjacent apertures 16, to prevent the wires causing excessive thickness relative to plate 14.

**[0067]** Heat-reactivable adhesive wires 64 can be added before or after the electronic modules, depending upon the arrangement anticipated. Likewise, the heat-reactivable adhesive wires can be provided on the side of substrate 12 opposite the electronic elements carried by the substrate, as shown in FIG. 11, or located elsewhere, relative to substrate 12, on the same side as the electronic elements. The heat-reactivable adhesive wire can adhere either to substrate 12 or to some of the electronic elements above which it is arranged. Those skilled in the art will understand that the possible variants are numerous. The assembly method here comprises an element that adheres to the electronic module and to plate 14 and passes through spaces 16 from a peripheral area to another peripheral area of each aperture 16. FIG. 11 shows the heat-reactivable adhesive wires parallel to one edge of rectangular apertures 16, but the wires could very well be arranged obliquely, particularly along a diagonal direction of said apertures 16.

**[0068]** FIGS. 12 to 15 show two variants of a fourth embodiment of an assembly according to the invention. The references that have already been described previously will not be described again here in detail. This fourth embodiment